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[DIRECTIONAL ELECTROMAGNETIC WAVE RESISTIVITY APPARATUS AND METHOD]

Abstract

A novel on-the-fly data processing technique is useful for extracting signals from the azimuthal variation of the directional measurements acquired by a logging tool within a borehole. The relevant boundary, anisotropy and fracture signals are extracted from the formation response through fitting of the azimuthal variation of the measured voltages to some sinusoidal functions. The orientation of the bedding is also obtained as a result. The extracted directional signals are useful for obtaining boundary distances and making geosteering decisions. Two techniques involving inversion and cross-plotting may be employed, depending on the nature of the boundary. A Graphical User Interface (GUI) is part of a system to facilitate flexible definition of inversion objectives, for improving the inversion results, and for visualization of the formation model as well as inversion measurements.